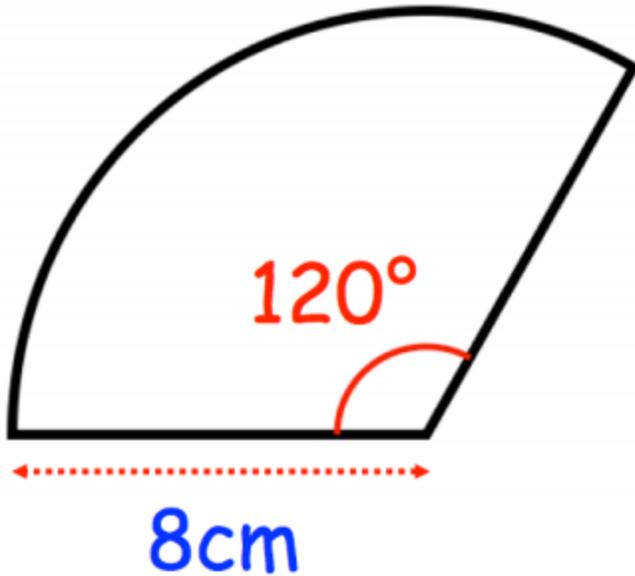Pre-AP Geometry Unit 4 - Measurement in Two and Three Dimensions

Question 1
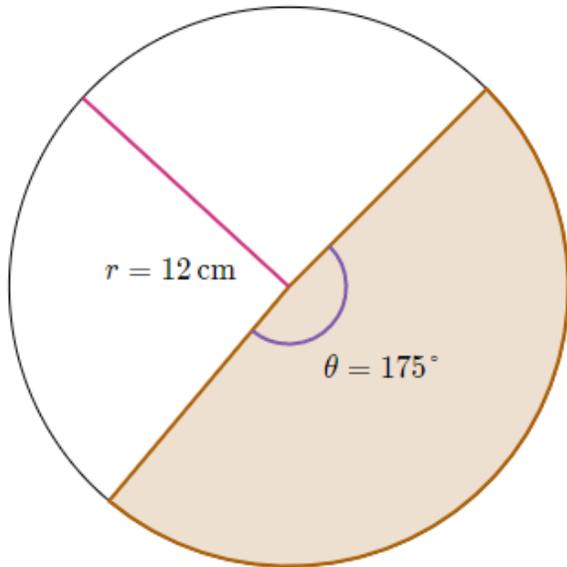
Find the area of the sector, rounding your answer to 1d.p.

120°

8cm

    A. 67.1cm^2
    B. 67.0cm^2
    C. 16.8cm^2
    D. 134.0cm^2

Question 2

A sector with a central angle measure of 175° has a radius of 12cm.

$r = 12\,\text{cm}$

$\theta = 175°$

What is the area of the sector?

A. $\dfrac{35}{3}\pi$ cm²

B. 24π cm²

C. 70π cm²

D. 144π cm²

Question 3

For each of the following similar shapes, find the unknown area:

2 cm | x cm²

4 cm | 24 cm²
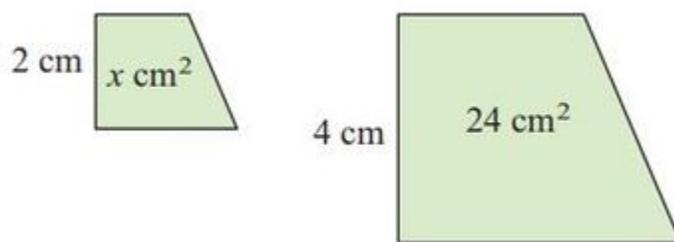
A. 5
B. 6
C. 7
D. 8

Question 4

A masonry crew is laying a garden feature made out of bricks that are in the shape of an equilateral triangle. The area of each brick is 4 square inches. The finished floor is a similar triangle that is dilated by a scale factor of 16. What is the area of the finished floor?

4 in.
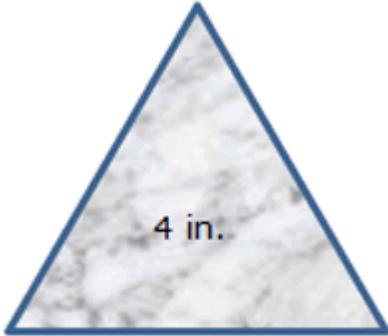
What is the area of the finished floor?

- **A.** 1,024 square inches
- **B.** 256 square inches
- **C.** 64 square inches
- **D.** 12 square inches

Question 5

A circle has a diameter of $8\frac{3}{4}$ inches. If the circle is dilated by a scale factor of $\frac{1}{3}$, what will be the effect on the area of the new circle?

What will be the effect on the area of the new circle?

- A. The area of the new circle will be the same as the area of the original rectangle.
- B. The area of the new circle will be 3 times as large as the area of the original circle.
- C. The area of the new circle will be 1/3 as large as the area of the original circle.
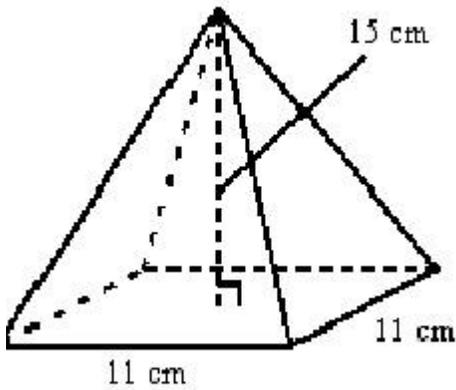- D. The area of the new circle will be 1/9 as large as the area of the original circle.

Question 6

What is the volume of this prism?
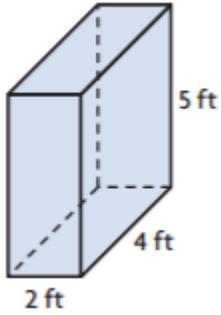
A. 20 cubic feet
B. 8 cubic feet
C. 40 cubic feet

Question 7

Find the volume of the figure.

A. 126 cm^3
B. 907.5 cm^3
C. 605 cm^3
D. 55 cm^3

Question 8

Choir is selling Pringle Chips to raise money for a field trip. The container has a diameter of 9 inches and a height of 32 inches.
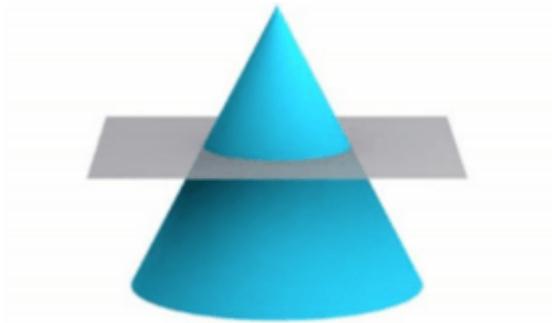
Which equation can be used to find the volume of the container?

A. V = π(9)
B. V = π(4.5)²(32)
C. V = π(9)²(32)
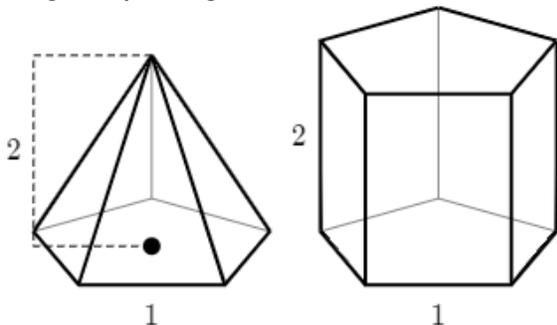**D.** V = π(4.5)(32)

Question 9

What shape will the horizontal cross-section of a cone be?

A. Dome
B. Circle
C. Pyramid
D. Triangle

Question 10

Consider the following right pyramid and right prism. Both figures have a base that is a regular pentagon.

Heidi tried to use Cavalieri's principle to show that the two figures have the same volume.

"The base areas are the same. Therefore, corresponding cross-sections have the same area. The figures have the same height. So the volumes must be the same."

What is the first mistake Heidi made?

    A. The base areas are not the same.
    B. It isn't true that corresponding cross-sections have the same area.
    C. The heights are not the same.

Question 11

The following figures all have the same height and same base area.
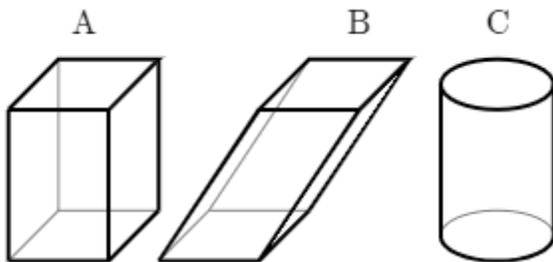
For which of the figures can we apply Cavalieri's principle to show they have the same volume?

    A. Only *A* and *B*
    B. Only *A* and *C*
    C. Only *B* and *C*
    D. *A, B,* and *C*

Question 12

A cereal box is 12 cm tall. The area of the base is 7 cm. What is the volume?

    A. 84 cm^2
    B. 84 cm^3
    C. 83 cm
    D. 84

Question 13

Michael has a very large soup pot shaped like a cylinder that has a height of 15 inches and a radius of 6 inches. How much soup can Michael's soup pot hold?

    A. 5596.07 in^3

B. 593.76 in³
C. 1781.283 in³
D. 94.5 in³

Question 14

Soda is sold in aluminum cans that measure 6 inches in height and 2 inches in diameter. How many cubic inches of soda are contained in a full can?

   A. 12.0
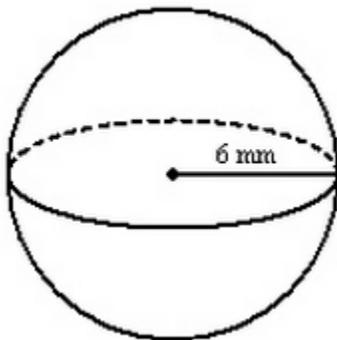   **B.** 24.0
   C. 75.4
   D. 18.8

Question 15

Lucas found a punctured bouncy ball in his basement. He wants to know how much air used to fill up the entire ball. The diameter of the ball is 6 in. Find the volume. Use 3.14 for π.

   A. 113 in³
   B. 345.7 in³
   C. 904.3 in³
   D. 589 in³

Question 16

What is the surface area?

6 mm

   A. 6658.56 mm²
   B. 452.16 mm²
   C. 904.32 mm²
   D. 108.8 mm²

Question 17

What is the surface area of a composite figure of a cone and a sphere, both with a radius of 5 cm, if the height of the cone is 12 cm? Consider an ice cream cone as an example of the composite figure, where half of the sphere is above the edge of the cone.

    A. 125π cm²
    B. 50π cm²
    C. 115π cm²
    D. 165π cm²
    E. 65π cm²

Question 18

What is this formula used to find?

$$V = \frac{4}{3}\pi r^3$$

    A. The volume of a cylinder
    B. The volume of a cone
    C. The volume of a sphere
    D. The area of a circle

Question 19

Jack wants to know how much water a sphere can hold with a radius of 8 cm. Find the volume. Use 3.14 for pi.

    A. 83.6 cm³
    B. 2144.7 cm³
    C. 254 cm³
    D. 2220 cm³

Answer Key

1. B
2. C
3. B
4. A
5. D
6. C
7. C
8. B
9. B
10. B
11. D
12. B
13. C
14. D
15. A
16. B
17. C
18. C
19. B